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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,878	04/12/2007	Harry W.C. Raaijmakers	06167-PCT-PA	3517

7590 04/10/2009  
Armstrong Kratz Quintos Hanson & Brooks  
Suite 220  
502 Washington Avenue  
Towson, MD 21204

EXAMINER
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BLAND, LAYLA D

ART UNIT	PAPER NUMBER
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1623

MAIL DATE	DELIVERY MODE
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04/10/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/587,878	<b>Applicant(s)</b> RAAIJMAKERS ET AL.	
	<b>Examiner</b> LAYLA BLAND	<b>Art Unit</b> 1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This application is a national stage entry of International Application No. PCT/BE05/00011, filed January 28, 2005, which claims priority to European Application No. 04075280.0 filed on January 30, 2004. The certified copy of the priority has not been filed with the instant Application.

Claims 1-11 are pending and are examined on the merits herein.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3, 5, 10, and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 depends from claim 1 and recites the limitation "wherein the molar ratio of halogenoalkylcarboxylate : inulin is in the range of from 1.5 to 4.5." In the method of claim 1, halogenoalkylcarboxylate is added in step (a) and again in step (c). It is unclear whether the molar ratio in claim 3 refers to the initial reaction or if the molar ratio of claim 3 is intended to be the final ratio.

Claim 5 ultimately depends from claim 1 and recites the limitation "wherein the pH of the reaction mixture is in the range of from 9.5 to 11.5." Claim 1 recites two different pH limitations at different steps in the method. It is unclear at which point in the method of claim 1 the pH should be 9.5 to 11.5.

Claims 10 and 11 depend from claim 1 and recite limitations wherein the aqueous medium in step (a) optionally contains inulin at specific weight percentages. In claim 1, inulin is added to the mixture in step (b), not in step (a). It is unclear whether claims 9 and 10 intend for inulin to be present in step (a) in the recited amounts, and then additional inulin is added in step (b), or if claims 9 and 10 are intended only to limit the amount of inulin which is added in step (b).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verraest et al. (Carbohydrate Research 271 (1995) 101-112) in view of Raehse et al. (US 4,507,474, March 26, 1985).

Verraest et al. teach a process for preparing carboxymethyl inulin. Inulin is dissolved in water and NaOH and monochloroacetic acid or its sodium salt are added, followed by heating [pages 102 and 103, Methods (a) and (b)]. Reactions were carried out for 60-240 minutes at 55°C, 75°C, and 95°C with a molar ratio of inulin: MCA: NaOH of 1:2:4.2 [page 108, Figure 4 and Table 3]. When 20 (3.4 g) mmol of inulin was used, water content of the reaction was 5-25 mL (about 14-68% inulin by weight) [page 109, Table 4].

Verraest et al. do not teach a process wherein additional halogenoalkylcarboxylate and alkali are added during the heating step.

Raehse et al. teach a process for preparing highly substituted carboxyalkyl celluloses comprising up to 3 stages [see abstract]. During each reaction stage, the carboxyalkylating agent is used in a quantity of no more than 2.5 moles per mole of anhydroglucose unit and the alkalizing agent is used in a quantity of no more than 5 moles per mole of anhydroglucose unit [column 2, lines 14-19]. Satisfactory results are usually obtainable with only 2 reaction stages [column 2, lines 36-40]. Etherification is normally carried out at temperatures in the range of about 30-85°C, with the exception of the first stage which is carried out at temperatures in the range of about 10-30°C [column 3, lines 8-14]. Preferred carboxylating agents include the sodium salt of monochloroacetic acid [column 4, lines 61-64]. The reaction medium is aqueous [column 8, Examples]. The quantity of carboxyalkylating agent used in each step can be 1.0-2.2 moles and the quantity of alkalizing agent used in each step can be about 2-4 moles [claims 3-6].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the method of Verraest, and to include a second reaction stage wherein more MCA and NaOH are added to the reaction mixture, as taught by Raehse. Raehse teaches that additional reaction stages are effective in producing a product which is highly substituted. Although Raehse teaches reaction of cellulose instead of inulin, the skilled artisan would expect that methods which are effective for substitution of cellulose would also be effective for substitution of inulin

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because both are polysaccharides, and both contain primary and secondary hydroxyl groups which are the reactive sites. Further, the reaction conditions used by Verraest for the carboxymethylation of inulin are similar to the reaction conditions used by Raehse: reaction of the polysaccharide, monochloroacetic acid, and sodium hydroxide at elevated temperature. Thus, the skilled artisan would have a reasonable expectation of success in preparing a carboxyalkylinulin via modification of Varraest's method as discussed above. Although Varraest and Raehse are silent with respect to the pH of the reaction mixture, amounts of alkali are described, and the pH is a function of the amount of alkali added. Thus, the skilled artisan would have sufficient guidance to carry out the modified reaction as discussed above and to optimize reaction conditions, which is well within the skill of the skilled artisan.

### ***Conclusion***

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAYLA BLAND whose telephone number is (571)272-9572. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anna Jiang can be reached on (571) 272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shaojia Anna Jiang/  
Supervisory Patent Examiner, Art Unit 1623

/Layla Bland/  
Examiner, Art Unit 1623